

We claim:

1. A method of providing directory assistance services to a customer caller, comprising the steps:

- receiving a customer call on a first inbound channel;
- 5 eliciting a directory assistance request from the customer;
- searching a database containing telephone numbers for search results including a destination telephone number that satisfies the directory assistance request;
- 10 allocating a first outbound channel for attempting to establish a connection to a destination telephone associated with the destination telephone number;
- applying a call analyzer to the first outbound channel;
- monitoring the first outbound channel with the call
- 15 analyzer for a configurable period of time to detect a connection status condition;
- detecting a connection status condition;
- determining if the connection status condition indicates a network communication problem;
- 20 if the detected connection status condition indicates a network communication problem:
- without further action by the customer, connecting the customer to a directory assistance operator; and
- providing the directory assistance operator with
- 25 search results from the directory assistance request.

2. The method of claim 1, further comprising the step of applying a DTMF detector to the first inbound channel to detect customer input.

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3. The method of claim 2, in which the applying a DTMF detector step comprises the step of applying a DTMF detector to the first inbound channel, for the period of time from application of the DTMF detector until the customer

35 disconnects, to detect customer input.

4. The method of claim 1, in which the customer call is originated from a wireless telephone.

5. The method of claim 1, further comprising the steps:  
5 receiving call origination location data on the first inbound channel; and  
verifying the authority of the customer to attempt to establish a connection to the destination telephone.

10 6. The method of claim 1, in which the applying a call analyzer step comprises the step of dedicating a call analyzer exclusively to the first outbound channel.

7. The method of claim 1, further comprising the step of  
15 applying the call analyzer to a second outbound channel.

8. The method of claim 1, in which the connection status condition is one of the set of reorder, PBX intercept, SIT intercept, vacant code, reorder-SIT, no circuit LEC, reorder-  
20 carrier, no circuit-carrier, dial tone, continuous on tone, and silence.

9. The method of claim 1, further comprising the step of terminating the attempt to establish a connection to the  
25 destination telephone before connecting the customer to a directory assistance operator.

10. The method of claim 1, further comprising the step of informing the customer of the network communication problem  
30 before connecting the customer to a directory assistance operator.

11. The method of claim 1, in which the connecting the customer step comprises:  
35 placing the customer call into a call distribution system; and

connecting the customer call to a directory assistance operator specified by the call distribution system.

12. The method of claim 11, in which the placing the customer  
5 call step comprises the step of placing the customer call into a call distribution system with a first assigned priority.

13. A method of providing directory assistance services to a  
10 customer caller, comprising the steps:

receiving a customer call on a first inbound channel;  
eliciting a directory assistance request from the customer;

searching a database containing telephone numbers for  
15 search results including a destination telephone number that satisfies the directory assistance request;

allocating a first outbound channel for attempting to establish a connection to a destination telephone associated with the destination telephone number;

20 applying a call analyzer to the first outbound channel;  
monitoring the first outbound channel with the call analyzer for a configurable period of time to detect a connection status condition;

detecting a connection status condition;

25 determining if the connection status condition is a ring-no-answer condition;

if the detected connection status condition is a ring-no-answer condition:

transferring the customer to a voice server while  
30 continuing the attempt to establish a connection to the destination telephone over the first outbound channel and continuing to monitor the first outbound channel with the call analyzer;

providing the voice server with search results from  
35 the directory assistance request; and

presenting the customer with a menu of directory assistance options.

14. The method of claim 13, further comprising the step of applying a DTMF detector to the first inbound channel to detect customer input.

5 15. The method of claim 14, in which the applying a DTMF detector step comprises the step of applying a DTMF detector to the first inbound channel, for the period of time from application of the DTMF detector until the customer disconnects, to detect customer input.

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16. The method of claim 13, in which the customer call is originated from a wireless telephone.

17. The method of claim 13, further comprising the steps:  
15 receiving call origination location data on the first inbound channel; and  
verifying the authority of the customer to attempt to establish a connection to the destination telephone.

20 18. The method of claim 13, in which the applying a call analyzer step comprises the step of dedicating a call analyzer exclusively to the first outbound channel.

19. The method of claim 13, further comprising the step of  
25 applying the call analyzer to a second outbound channel.

20. The method of claim 13, in which the menu of directory assistance options includes the set of options comprised of one or more of the following:

30 conveying the destination telephone number to the customer;

transmitting the destination telephone number to the customer's alphanumeric communication device;

transferring the customer to a directory assistance  
35 operator;

continuing to monitor the first outbound channel with the call analyzer; and

recording a message to be delivered to a destination party associated with the destination telephone number. .

21. A method of providing directory assistance services to a customer caller, comprising the steps:

receiving a customer call on a first inbound channel;  
eliciting a directory assistance request from the customer;  
searching a database containing telephone numbers for search results including a destination telephone number that satisfies the directory assistance request;  
allocating a first outbound channel for attempting to establish a connection to a destination telephone associated with the destination telephone number;  
applying a call analyzer to the first outbound channel;  
monitoring the first outbound channel with the call analyzer for a configurable period of time to detect a connection status condition;  
detecting a connection status condition;  
determining if the connection status condition is a busy signal;  
if the detected connection status condition is a busy signal:  
removing the call analyzer from the first outbound channel;  
terminating the connection attempt to the destination telephone over the first outbound channel;  
connecting the customer to a voice server;  
providing the voice server with the search results from the directory assistance request; and  
presenting the customer with a menu of directory assistance options.

22. The method of claim 21, further comprising the step of applying a DTMF detector to the first inbound channel to detect customer input.

23. The method of claim 22, in which the applying a DTMF detector step comprises the step of applying a DTMF detector to the first inbound channel, for the period of time from application of the DTMF detector until the customer  
5 disconnects, to detect customer input.

24. The method of claim 21, in which the customer call is originated from a wireless telephone.

10 25. The method of claim 21, further comprising the steps:  
receiving call origination location data on the first inbound channel; and  
verifying the authority of the customer to attempt to establish a connection to the destination telephone.

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26. The method of claim 21, in which the applying a call analyzer step comprises the step of dedicating a call analyzer exclusively to the first outbound channel.

20 27. The method of claim 21, further comprising the step of applying the call analyzer to a second outbound channel.

28. The method of claim 21, further comprising the step of informing the customer of the busy signal before presenting  
25 the customer with a menu of directory assistance options.

29. The method of claim 21, in which the menu of directory assistance options includes the set of options comprised of one or more of the following:

30 conveying the destination telephone number to the customer;

transmitting the destination telephone number to the customer's alphanumeric communication device;

transferring the customer to a directory assistance  
35 operator;

continuing to monitor the first outbound channel with the call analyzer; and

recording a message to be delivered to a destination party associated with the destination telephone number.

30. A method of providing directory assistance services to a customer caller, comprising the steps:

receiving a customer call on a first inbound channel;  
receiving call origination location data on the first inbound channel;  
eliciting a directory assistance request from the customer;  
searching a database containing telephone numbers for search results including a destination telephone number that satisfies the customer's directory assistance request;  
verifying the authority of the customer to attempt to establish a connection to the destination telephone;  
retrieving the destination telephone number from the database;  
allocating a first outbound channel for attempting to establish a connection to a destination telephone associated with the destination telephone number;  
outdialing the destination telephone number over the first outbound channel;  
applying a call analyzer to the first outbound channel;  
applying a DTMF detector to the first inbound channel to detect customer input;  
monitoring the first outbound channel with the call analyzer to detect a connection status condition;  
detecting a connection status condition; and  
connecting the customer to a directory assistance provider upon detection of the connection status condition.

31. The method of claim 30, in which the applying a DTMF detector step comprises the step of applying a DTMF detector to the first inbound channel, for the period of time from application of the DTMF detector until the customer disconnects, to detect customer input.

32. The method of claim 30, in which the customer call is originated from a wireless telephone.

33. The method of claim 30, in which the connection status condition is a busy signal.

34. The method of claim 30, in which the connection status condition is a ring-no-answer condition.

35. The method of claim 30, in which the connection status condition is one of the set of reorder, PBX intercept, SIT intercept, vacant code, reorder-SIT, no circuit LEC, reorder-carrier, no circuit-carrier, dial tone, continuous on tone, and silence.

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36. The method of claim 33, in which the connecting step comprises the step of automatically connecting the customer to a voice server upon detection of the connection status condition.

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37. The method of claim 36, further comprising the steps:  
presenting the customer with a menu of directory assistance options; and

monitoring the first inbound channel with the DTMF detector to detect a customer input.

38. The method of claim 34, in which the connecting step comprises the step of automatically connecting the customer to a voice server upon detection of the connection status condition.

39. The method of claim 38, further comprising the steps:  
presenting the customer with a menu of directory assistance options; and

monitoring the first inbound channel with the DTMF receiver to detect a customer input.



40. The method of claim 35, in which the connecting step comprises the step of connecting the customer, with no further action by the customer, to a directory assistance operator upon detection of the connection status condition.

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41. The method of claim 40, further comprising the steps:  
informing the customer of a network communication failure; and  
transferring the customer to a directory assistance

10 operator.

42. The method of claim 30, further comprising the steps:  
upon a successful connection attempt to the destination telephone, connecting the customer to a voice server;

15 presenting the customer with a menu of directory assistance options; and

monitoring the first inbound channel with the DTMF detector to detect a customer input.

20 43. The method of claim 30, in which the connecting step comprises:

placing the customer call into a call distribution system; and

25 connecting the customer call to a directory assistance provider specified by the call distribution system.

44. The method of claim 43, in which the placing the customer call step comprises the step of placing the customer call into a call distribution system with a first assigned

30 priority.

45. The method of claim 30, further comprising the step of applying the call analyzer to a second outbound channel.

35 46. The method of claim 30, in which the applying a call analyzer step comprises the step of dedicating the call analyzer exclusively to the first outbound channel.

47. The method of claim 30, in which the connecting step comprises the steps:

connecting the customer to a directory assistance provider upon detection of the connection status condition;

5 and

presenting the customer with a menu of directory assistance options, said menu consisting of:

conveying the destination telephone number to the customer;

10 transferring the customer to a directory assistance operator;

transmitting the destination telephone number to the customer's alphanumeric communication device;

continuing to monitor the first outbound channel  
15 with the call analyzer; and

recording a message to be delivered to a destination party associated with the destination telephone number.

20 48. A directory assistance system for providing directory assistance services to a customer caller, comprising:

a plurality of inbound channels for receiving customer calls;

a plurality of outbound channels for attempting to  
25 establish connections to destination telephones;

a plurality of directory assistance operators;

a voice server;

switching means having a plurality of call analyzers for monitoring and detecting connection status conditions on the  
30 plurality of outbound channels;

server means capable of searching directory assistance databases for search results including destination telephone numbers that satisfy directory assistance requests; and

means for connecting a customer call on a first inbound  
35 channel, without further action on the part of the customer, to a directory assistance operator upon detection, by a call

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analyzer, of a connection status condition indicating a network connection problem.

49. The directory assistance system of claim 48, further comprising a DTMF detector for monitoring and detecting customer input on the first inbound channel.

50. The directory assistance system of claim 48, further comprising:

- 10        memory means for storing the search results; and  
         transfer means for transferring the search results to directory assistance operators.

51. A directory assistance system for providing directory assistance services to a customer caller, comprising:

- a plurality of inbound channels for receiving customer calls;  
         a plurality of outbound channels for attempting to establish connections to destination telephones;  
20        a plurality of directory assistance operators;  
         a voice server;  
         switching means having a plurality of call analyzers for monitoring and detecting connection status conditions on the plurality of outbound channels;  
25        server means capable of searching directory assistance databases for search results including destination telephone numbers that satisfy directory assistance requests; and  
         means for connecting a customer call on a first inbound channel, without further action on the part of the customer,  
30 to the voice server upon detection of a ring-no-answer connection status condition by a call analyzer.

52. The directory assistance system of claim 51, further comprising a DTMF detector for monitoring and detecting  
35 customer input on the first inbound channel.

53. The directory assistance system of claim 51, further comprising:

memory means for storing the search results; and

transfer means for transferring the search results to  
5 the voice server.

54. A directory assistance system for providing directory assistance services to a customer caller, comprising:

a plurality of inbound channels for receiving customer  
10 calls;

a plurality of outbound channels for attempting to establish connections to destination telephones;

a plurality of directory assistance operators;

a voice server;

15 switching means having a plurality of call analyzers for monitoring and detecting connection status conditions on the plurality of outbound channels;

server means capable of searching directory assistance databases for search results including destination telephone  
20 numbers that satisfy directory assistance requests; and

means for connecting a customer call on a first inbound channel, without further action on the part of the customer, to a voice server upon detection, by a call analyzer, of a connection status condition indicating a busy signal.

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55. The directory assistance system of claim 54, further comprising a DTMF detector for monitoring and detecting customer input on the first inbound channel.

30 56. The directory assistance system of claim 54, further comprising:

memory means for storing the search results; and

transfer means for transferring the search results to  
the voice server.

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